REMARKS

Claims 11, 14-15, 17-20, 24 and 28-20 have been rejected under 35 USC 103(a) as unpatentable over Yee in view of Hui. The rejection is respectfully traversed.

The Examiner has provides comments in the Response to Arguments section in paragraph 4 of the Office Action. Applicants provide the following remarks in response thereto.

The invention combines two sideband modulated signals with overlapping spectra to a polarization multiplex signal. The advantage is that the spectral efficiency is improved, because the bandwidth needed is reduced according to the differential frequency. If the spectra overlap totally the bandwidth for the transmission of two sideband modulated signal corresponds to the bandwidth of only one single sideband modulated signal (or one subband signal).

Yee, referring for example to Figure 16, uses subband modulation. First, two subbands and a tone are electrically generated (col. 20, line 65 – col. 21, line 33) and then modulated onto different optical carriers (compare with Fig 12, and col. 14, line 62 - col. 15, line 52) to generate double-sideband signals 1660A and 1668B. Each double-sideband signal has a carrier and a lower and an upper tone, and two upper and two lower subbands (the gap between the subbands and the optical carrier can be achieved be subband modulation only). The double-sideband signals having different polarization are combined, and the resulting polarization multiplex signal is passed to filter 1615. The filter extracts a "single sideband polarisation multiplex signal" 1690 having two single sideband signals with two carriers, two tones and four different subbands, two subbands arranged on both sides of the first and second tone respectively. As illustrated in Figures 16 and 20B, showing the spectrum of the extended system 1900 shown in Figure 19, the spectra of the polarized sideband signals do not overlap, wasting bandwidth (to obtain other advantages) and not reduced compared with the bandwidth for transmitting two sideband modulated signals in a common system.

According to the claimed invention, on the other hand, the data signals are modulated directly onto the optical carriers to achieve single sideband modulated signals. This point is clarified as claim 11 clearly requires that modulating first and second data signals onto a sideband of an optical carrier signal, such that the spectra of the first and second sideband modulated signals overlap.

Yee fails to disclose that a second optical carrier signal has the same optical carrier frequency or differs by a differential frequency from the first carrier frequency such that the spectra of the first and second sideband modulated signals overlap. The spectral overlapping of the polarized single sideband signals is essential to the claimed invention. This feature is not disclosed by Yee et al. Again, looking at signal 1690 output by the filter 1625: The spectra of the polarized signals do not overlap. Or looking at all other frequency diagrams, e.g. 20B: All spectra do not overlap.

The Examiner also argues that both spectra fit within the bandwidth of optical filter 1615 and is inherent. Applicants respectfully disagree. The filter 1615 is only extracting sideband modulated signals with non-overlapping spectra from the double sideband modulated subband signals, and two complete sideband modulated signals are output. The transmission bandwidth according to Yee is more than eight times the subband bandwidth (compare Fig. 20B). In the instant invention, on the other hand, the reduced bandwidth for transmitting two sideband modulated signals is between one subband bandwidth and up to two subband bandwidths.

Yee also fails to disclose a combination of a polarisation controller and a polarisation splitter for dividing the two polarised signals (Fig. 16). Referring to Fig. 20 B, showing a frequency diagram of an expanded system, the polarization splitter 1633 cited by the Examiner is a simple optical splitter or a wavelength division coupler (dichroic filter). There is no overlap at all of the spectra in the frequency diagram, and therefore no reason to use a polarization splitter. If a dichroic coupler is used, the polarized sideband modulated signals are also separated without a polarization controller and without a polarization splitter.

The Examiner also notes that Yee fails to disclose the transmitted optical polarization multiplex signal to a polarization splitter, and deriving at least one control signal for controlling the polarization control element, but that Hui discloses this feature. However, there is no reason why the skilled artisan would have been motivated to use the controller of Hui instead of the controller of Yee. While Hui discloses the well known combination of a polarization controller and a polarization beam splitter, it would not make any sense to combine Hui with Yee and to use these expensive elements which are not necessary.

In view of the above, Applicants submit that this application is in condition for allowance. An indication of the same is solicited. The Commissioner is hereby authorized to

charge deposit account 02-1818 for any fees which are due and owing, referencing Attorney Docket No. 119010-054.

Respectfully submitted,

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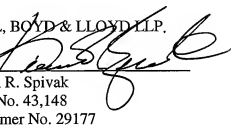
BY 
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